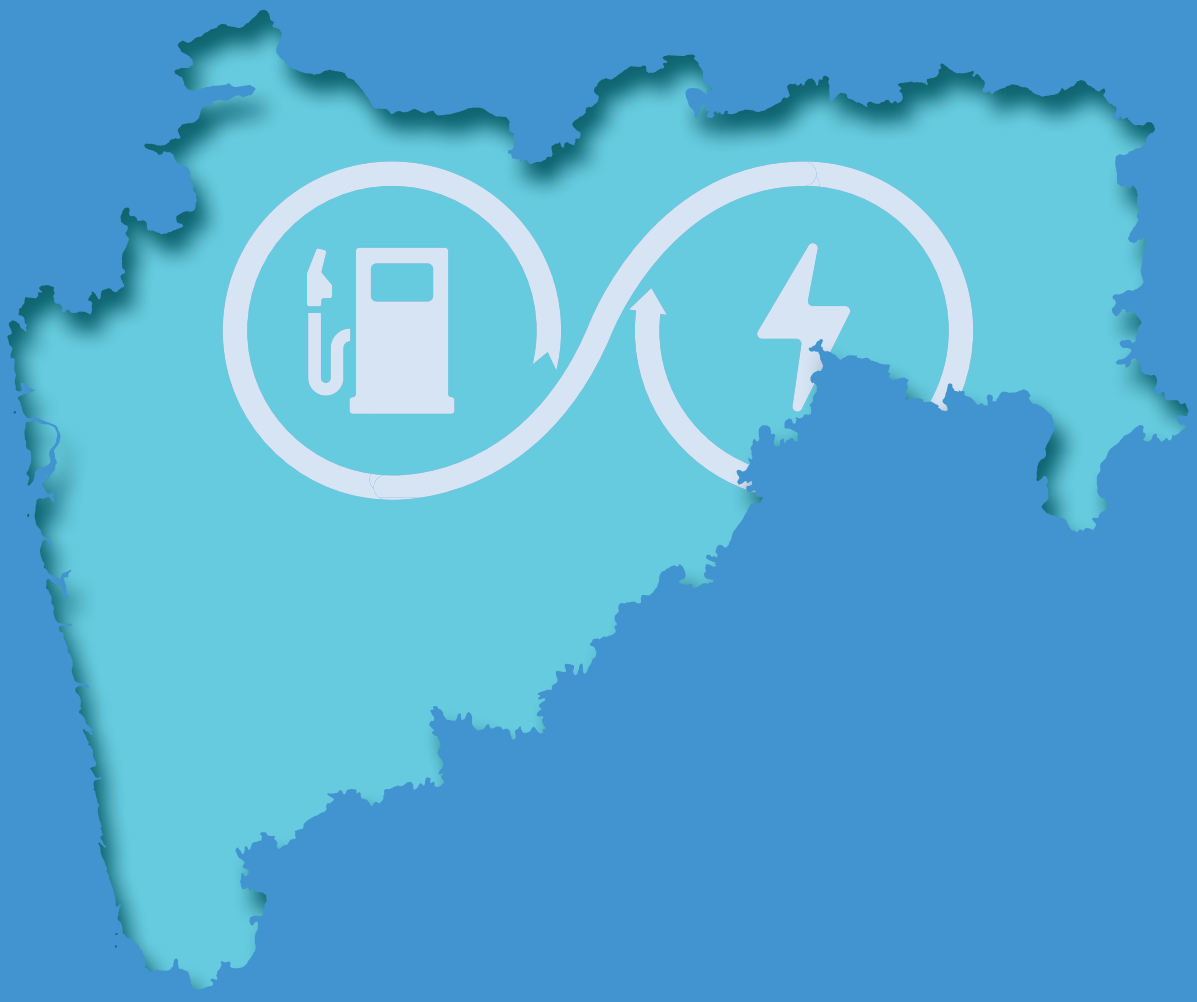
Summary for Stakeholders

NAVIGATING THE SHIFT

A JUST TRANSITION ROADMAP FOR MAHARASHTRA'S AUTOMOBILE SECTOR



iFOREST
INTERNATIONAL FORUM FOR ENVIRONMENT, SUSTAINABILITY & TECHNOLOGY

Summary for Stakeholders

Maharashtra's industrial economy is heavily reliant on the automobile sector. The sector's contribution to the gross state domestic product (GSDP) is about 7%, the highest among all manufacturing sectors and 15.3% of industrial GSDP. A transition of the automobile sector to cleaner technologies and fuels will be significant for decarbonising the state's industrial sector and strengthening climate change action. This shift also promises to usher in new opportunities and growth avenues for the state.

However, the transition poses challenges for businesses in the traditional auto industry, the workforce, and the environment. To mitigate these potential downsides, a sustainable and just transition of the automobile sector is essential.

A. Leading India's EV Transition

India's automobile sector is already experiencing the electric vehicle (EV) revolution. Maharashtra, India's automobile hub, remains a front-runner in the transition from internal combustion engine (ICE) vehicles to EVs given a conducive policy environment and industry investments.

Maharashtra accounts for 12.6% of total EV sales across India with the highest sales recorded for 2Ws and 4Ws in the country.

EV penetration in Maharashtra has increased drastically in the past three years, from just 0.4% share of all vehicle sales in 2020 to 7.6% by 2023. The state recorded the highest sales of EV cars and two-wheelers (2Ws) in the country. Overall, the state accounted for a total of 191,696 EV sales in the passenger vehicle segment—2Ws, three-wheelers (3Ws), and four-wheelers (4Ws)—which is 12.6% of India's total and second highest in the country. Considering only 2W and 4W sales, Maharashtra topped the chart.

The combined implementation of the FAME II scheme and the state EV Policy has boosted EV adoption massively.

The policy environment for EV adoption has been particularly strengthened since 2021 with the enactment of the Maharashtra EV Policy and the existing Faster Adoption and Manufacturing of Electric Vehicles in India (FAME) scheme II remaining effective.

Given conducive policies, EV adoption has increased drastically in the last three years, from just 0.4% share of all vehicle sales in 2020 to 7.6% by 2023. Overall, the most significant number of registrations in 2023 was for 2Ws (87.6%), followed by 4Ws (6.4%) and 3Ws (6%). The state's charging infrastructure has also benefitted from these policies. The state has 3,079 public charging stations, the highest in India, constituting over 25% of the country's total.

The public transport system is also experiencing EV penetration, with the state accounting for over 31% of the total e-buses deployed in the country.

Besides personal vehicles, electric buses (e-buses) have also been sanctioned under FAME in Maharashtra. A total of 1,110 buses have been sanctioned and 759 deployed. Out of this, 664 buses have been deployed under FAME II. The total deployment of e-buses in the state is also the highest, constituting over 31% of the country's total.

Maharashtra remains the top beneficiary of the FAME II scheme and is also likely to leverage the benefits of the PLI scheme for automobile and auto components.

Over the last five years, Maharashtra has received ₹1,111.4 crores from FAME II scheme (since. the scheme's inception in 2019 until December 2023), combining various vehicle segments. This is about 17.4% of the total disbursal (₹6,308 crores) under FAME II to various states.

The state's top industry leaders have also received approvals under the Production Linked Incentive (PLI) scheme for the Automobile and Auto Component Industry, which aims to localise EV manufacturing. Overall, the scheme has attracted a proposed investment of ₹74,850 crores.

B. Prospective Impacts from the Technological Shift

The transformation from ICE vehicles to EVs will have impacts across the auto value chain – from the original equipment manufacturers (OEMs) and auto component manufacturers (ACMs) to the service sector. This will have implications for the workforce associated with these businesses, and the districts and clusters where the manufacturing units are concentrated.

To precisely understand the prospective impacts on businesses and workers a primary survey was conducted in Pune covering a total of 100 ACMs and 450 workers.

1. Impact on Businesses

The EV transition will impact the traditional automobile industry as 45-84% of parts of an ICE vehicle will become obsolete.

The transition from ICE to EV will make about 90-100% of parts of the powertrain of an ICE vehicle obsolete depending on the vehicle type. The non-powertrain parts of ICE vehicles will also be moderately impacted, ranging from 12-37% depending on vehicle type. Besides, there are many similarities in non-powertrain components, and thus, these components of an ICE vehicle can be repurposed for an EV.

Overall, 45-84% of parts of an ICE vehicle will become obsolete. This will impact the manufacturers of such components as they will have to supply fewer parts. There will also be impacts on the spare parts and aftermarket activities resulting from the diminished number of wearable parts in the EV powertrain.

The small and micro enterprises constituting 97% of Maharashtra's auto manufacturing segment remain vulnerable to the transition.

There are at least 16,602 units involved in the manufacturing of automobiles and automobile components in various districts in the state. Of these, 26 belong to OEMs and 16,576 to ACMs.

Overall, small and micro enterprises (SMEs) dominate the manufacturing segment constituting 97% of the total units. Among the rest, about 2% are medium enterprises, and 1% are large ACMs and OEMs.

These SMEs remain particularly vulnerable to the transition due to constraints in financial resources, challenges of access to institutional capital, and limited capacity of technology adoption for transitioning to the EV ecosystem.

A deep-dive assessment of Pune cluster, the state's and India's largest automobile hub, shows that 25% of the ACMs will be highly or moderately impacted by the transition.

The study of Pune cluster, including a primary survey of enterprises, shows that around 11% of the ACMs will be highly impacted by the transition, and another 14% will be moderately impacted. About one-fourth of the enterprises are in the high and moderately impacted category.

Within the highly impacted category, ACMs involved in subassemblies, such as 'engine, engine exhaust and fuel' and 'transmission' account for nearly 92%. For the moderately impacted category, ACMs involved in such sub-assemblies account for almost 51%.

It is noteworthy that the majority of the enterprises falling under the highly and moderately impacted categories are micro, small and medium enterprises (MSMEs). This highlights the vulnerability of these businesses and the potential challenges they may face during the transition.

ACMs have started transitioning to EV-related components, but mostly in the same segment.

The enterprise survey also shows that about 45% of ACMs supply EV parts to OEMs. These are primarily SMEs involved in manufacturing non-powertrain parts, such as body, moulding, process-based components, etc.

Therefore, the transition is logical, as these enterprises expand their business by supplying parts of the same sub-assembly for EVs. Only a small share of enterprises (about 7%), primarily medium and large, are doing an opportunistic transition by investing in research and development (R&D) to move to the EV ecosystem.

2. Impact on Workforce

About 3.4 lakh workers are engaged directly by the automobile and auto component manufacturers in Maharashtra.

The OEMs and ACMs collectively employ at least 3,35,237 people in the state formally (including permanent and contractual workers), creating large income dependence. Besides, a significant number of informal workers are associated with the sector, particularly in the MSMEs.

The shift from ICE vehicles to EVs will have implications for a large proportion of the workforce currently engaged in the manufacturing of ICE vehicles, as well as those engaged in the value chain such as servicing and repairs. The digital transformation in the automobile industry will also require a new set of skills from manufacturing to servicing.

Table 1: Formal employment in the automobile sector in Maharashtra

OEM	ACM				Total
	Large	Micro	Small	Medium	
95,201	43,444	71,114	74,845	50,633	3,35,237

Source: iFOREST analysis based on data from the Department of Industries, individual OEMs, and Survey of industries.

A major impact will be on contractual and informal workers associated with the ACMs.

The survey of ACMs in Pune cluster shows that the largest share of workers are contractual workers. This includes a sizable proportion of workers who do not have any employer-provided benefits. Besides, there is a significant proportion of informal workers. Overall, contractual, and informal workers constitute more than two-thirds (71%) of the workers in ACMs. The informality is higher in SMEs.

The impact of the EV transition will affect 31% of the job roles in the ICE ecosystem, particularly related to manufacturing.

About 31% of the job roles in the ICE ecosystem will be affected – 14% will become obsolete and 17% will require reskilling. Maximum job roles will be affected in ICE vehicle manufacturing. Out of the total job roles in this segment, 21.4% would become obsolete.

A workforce survey in the Pune cluster shows that the highest percentage of workers are engaged in manufacturing-related job roles. Overall, 27% of the workforce was found to have machining job roles. The other significant percentage of the workforce are welders (about 11%) and fitters (9%).

Timely skilling and reskilling interventions can minimise job loss as a majority of the workers in ACMs have decent education and skill levels.

A majority of the workers engaged in the ACMs have secondary or higher secondary-level education. The workforce survey shows that, overall, about 37% of the workers have completed secondary-level education (tenth standard), and 34% higher secondary education. Additionally, 14.4% possess vocational or specialized training. Concerning vocational training, on-the-job learning is prevalent among workers preparing them with the required skills.

Overall, a large proportion of the workforce associated with the ACMs have basic education and skills. Around two-thirds of the auto sector job roles fall between the National Skills Qualification Framework (NSQF) levels 4 and 5. These two levels generally represent jobs such as operators/technicians and managers. People working at NSQF 4 and 5 are skilled and have at least a higher secondary level education. Besides, there are also graduates, including those with technical degrees from polytechnics and Industrial Training Institutes (ITIs).

The overall impact of the EV transition on jobs will be positive due to the creation of new job roles and EV penetration.

The EV ecosystem while will replace traditional jobs, but will overall create 5% new job roles. Besides, while the number of jobs supported by EVs is slightly lower than ICE vehicles, there will be a net increase in jobs in the automobile sector due to the penetration of EVs. Modeling projections by iFOREST show that the total number of jobs in passenger car manufacturing will grow from 1.7 million in 2023-24 to 3.3-3.7 million in 2036-37 under various policy scenarios.

3. Overall impact on Districts and Auto Clusters

About 95% of all automobile enterprises are concentrated in five clusters in the state.

The automobile enterprises are concentrated in five industrial clusters of the state, commonly called the auto clusters. These five clusters - Pune, Mumbai, Aurangabad, Nashik, and Nagpur, have 95% of the enterprises. The agglomeration of enterprises in certain districts/regions, and their subsequent economic dependence makes these regions vulnerable to the EV transition.

Overall, six districts in Maharashtra remain transition hotspots with Pune topping the chart.

While automobile enterprises are distributed almost across all districts in Maharashtra, about 26% are concentrated in Pune. Overall, six districts collectively account for 65% of the automobile units in the state.

Concerning the number of workers, these districts account for over 83% of the formal workforce engaged in OEMs and ACMs. Besides, there is a vast informal dependence on the automobile sector in all these districts.

The transition from ICE vehicles to EVs will have a concentrated impact on certain districts and auto clusters of the state considering the concentration of enterprises and workforce dependence.

Table 2: Hotspot districts

District	Total no. of OEM units	Total no. of ACM units	Total no. of units (OEMs +ACMs)	Total no. of formal workers
Pune	23	4,226	4,249	180,610
Aurangabad	2	1,648	1,650	30,631
Kolhapur		1,691	1,691	23,488
Thane	1	1,269	1,270	14,463
Mumbai suburban		1,177	1,177	13,150
Nashik		863	863	16,738
Total	26	10,874	10,900	279,080

Source: iFOREST analysis based on data from the Department of Industries, individual OEMs, and Survey of industries.

C. Just Transition Roadmap

Just transition in the automobile sector presents a unique and promising opportunity for Maharashtra, especially when combined with technological innovations, new business avenues, prospects of job creation, and a focus on clean mobility.

Just transition of the automobile sector hinges on four key pillars that can aid the progress toward a sustainable, just, and inclusive automobile future.

The just transition vision of the automobile sector should be based on four pillars which are outcome-oriented and designed to guide the development of practical and holistic policies, plans, and investments.

Pillar 1-Technology and skilling: Will promote the simultaneous advancement of technology and the development of human resources to ensure the availability of skilled personnel to fully leverage technological capabilities and evolving demands. At the same time, technology needs to be designed and implemented in a manner so that job displacements are reduced and the prospects for new jobs and employability are enhanced.

Pillar 2- Vibrant green manufacturing: Will support the green growth agenda and is positioned to make India a hub of green automobile manufacturing.

Pillar 3- Sustainable mobility choices: Transition from automobile as a product to mobility as a Service (MaaS) will promote sustainable urban mobility, reduce congestion and pollution, and support a diversification of income opportunities around clean mobility.

Pillar 4- Green energy and material circularity: Will reduce the life cycle impact of EVs, from energy and material use, to end-of-life material management.

Cooperative engagement of various stakeholders at the state and district levels will be necessary to steer the transition.

The states will be at the forefront of developing plans, programmes, and institutional mechanisms to address just transition measures. Considering the state's important role in steering the transition, a comprehensive just transition framework for the automobile sector will be required at the state level covering four components- policies, strategic plans, institutional mechanisms, and a stakeholder engagement plan.

The State Government will have a crucial role in developing policies, strengthening institutional mechanisms, and mobilising financial resources.

The State Government will have four key roles in supporting a just transition of the automobile sector:

i. Develop a comprehensive, Just Transition Policy Framework for the automobile sector, by instituting necessary reforms in the existing policies related to EVs, industry and MSMEs, and workers, among others, and formulating new policies as required. Supporting provisions in other related state policies, such as renewable energy and urban mobility policies, should be integrated.

ii. Facilitate the development of district or cluster-level transition plans for auto clusters.

iii. Appoint special bodies, such as a State Automobile Sector Just Transition Task Force to inform the State Government and the district authorities/agencies on developing strategies, plans, and designing implementation measures.

iv. Create dedicated funds specifically targeted to support enterprises with limited resources and ACM workers, including informal workers.

District administration and agencies will have a crucial role in localised planning.

District administration and agencies such as the District Industrial Centers (DIC) will have a vital role in facilitating the development of local plans (such as the district/cluster transition plans) and implementing just transition measures concerning the transition MSMEs.

The industry bodies can play a vital role in facilitating a just transition given their strong presence and network in auto clusters.

Maharashtra has strong industry bodies and associations that can play a pivotal role. Collaboration between the State Government and these industrial bodies will strengthen just transition planning and the implementation of transition measures.

Maharashtra should leverage its expertise in engineering and innovation to position itself as a hub for automotive innovation.

With premier institutions in India and being a technology hub, along with a strong capital market, the state is well-positioned to become the hub of automotive innovation and lead in R&D that can make India a global leader. For this, policies, such as the state EV Policy need to be strengthened to support and incentivise the establishment of EV technology R&D centers (centers of excellence) and innovation hubs.

The transition of MSMEs will be a central issue, given their predominance in auto component manufacturing.

The state Industrial Policy should be strengthened to cover all aspects of MSME enablement for the EV ecosystem. This should include, technology support, access to financing, subsidies and incentives, business/trade promotion, and capacity building. At the same time, the effective implementation of schemes under the MSME Act 2006 will be essential. Measures can also include, developing schemes for short-term collateral-free credit access, and leveraging the network of cooperative banks to take advantage of MSME credit schemes, among others.

Dedicated funds should be created to specifically support small and micro enterprises, and informal workers, including women.

To support the MSMEs in a targeted manner, particularly SMEs, an MSME transition support fund should be created. This fund can provide transition support to both enterprises and their workers.

A dedicated Skill Development Fund should also be created to particularly support informal workers, women, and other disadvantaged groups to improve the scope of their employability in the EV ecosystem.

A comprehensive workforce transition policy will be required to support the existing workforce impacted by the transition and prepare a future-ready workforce.

Transition of the existing workforce to the new EV ecosystem to retain jobs, and increasing employability of the future workforce lies at the core of ensuring a just transition of the automobile sector. The government can develop a comprehensive workforce transition policy to address interventions required by the government and enterprises, such as skilling and other transition support, and improvement of foundational skills, among others. Women should be a key focus of workforce transition.

A Right to Repair and Servicing Policy needs to be instituted to reduce the vulnerability of workers engaged in servicing and repairing.

Servicing and repairing jobs are a crucial part of the automobile ecosystem. This segment also includes a large number of informal workers. To reduce the vulnerability of workers in the servicing and repairing segment a 'Right to Repair and Servicing' policy can be effective. The policy should enable EV manufacturers to involve local service centers in repairing and servicing and retain employment.

A Workforce Transition Plan by OEMs should be mandated for strengthening enterprise-level action.

Mandating the development of a Workforce Transition Plan by the OEMs will be an effective policy instrument for workforce transition at the enterprise level, and complement government policies and transition measures. The plan for workforce transition should be output-oriented, outlining key performance indicators (KPIs) for monitoring its implementation.

An output and outcome-oriented Cluster Transition Plan should be developed to support targeted transition measures for each automobile cluster.

Considering the concentration of ACMs in various clusters and the unique challenges and opportunities of each cluster (given the ACMs' business portfolio, workforce dependence, local industrial activities, business environment, etc.), the development of transition plans for each cluster will be necessary. The plan should include:

i. Detailed information related to the cluster, including enterprises and workers;

ii. Assessment of strengths, weaknesses, opportunities, and threats of the cluster;

iii. A five-year transition strategy and plan, including key intervention areas; and,

iv. Financial requirements.

Increasing cleaner public transport systems and shifting from vehicle ownership to Mobility as a Service (MaaS) will ensure a sustainable urban environment.

The EV transition should be balanced by considering the sustainability of our urban spaces. While EVs play a crucial role in decarbonising transportation, relying heavily on individual EV ownership will pose challenges to urban livability. Clean public transport systems, such as e-buses, along with last-mile connectivity services must be scaled up, by integrating mobility planning with urban planning.

Simultaneously, promoting MaaS can bring considerable environmental and societal benefits, such as lowering individual carbon footprints, reducing congestion, and boosting service sector employment opportunities in the clean mobility ecosystem.

Transition to EVs should consider a lifecycle approach to lower overall environmental impacts.

Achieving environmental sustainability in the EV transition requires a holistic approach that considers the entire lifecycle of EVs and addresses energy and material use at every stage. Using renewable-based energy will be essential to minimise the carbon footprint of EVs. Similarly, sustainable mining practices for extracting raw materials for battery manufacturing, battery recycling, and research into alternative battery chemistries with fewer rare or toxic materials will be essential for reducing material extraction and use and overall environmental impacts.

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